



GE Druck

**Pressure measurement
for research & industry**

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PV 62x

Pneumatic/hydraulic pressure stations

User manual

K0458

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Amendment Record

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1	18/08/08	N/A	Paul Stephens	Paul Stephens	115991	New document
2	23/06/11	26377	Glenn Roles	Glenn Roles	165496	Details of combined Pressure Release Valve and Priming Pump for PV623

Approvals

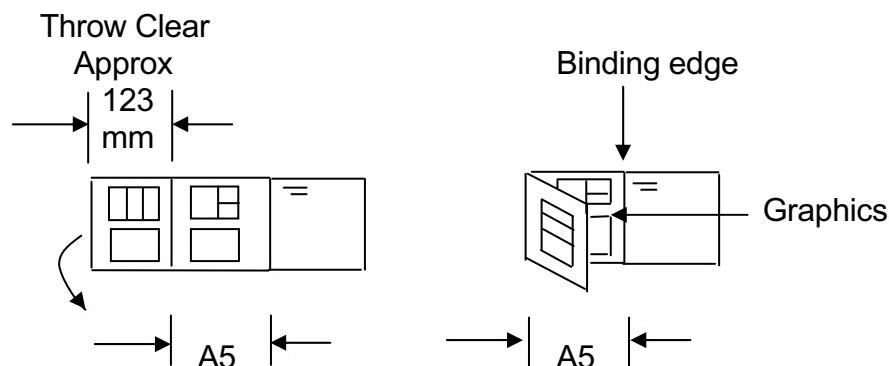
Engineering W Bonham	Marketing M Shelton	
Engineering S Matthews	Publications G Roles	

Print Instructions: K0458, Issue 2

- | | |
|-----------------------|---|
| 1) Print Instructions | DO NOT PRINT |
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Specification:

- Finished Size: A5 Portrait (148 x 210 mm)
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Druck PV 62x

pneumatic/hydraulic pressure stations

safety and quick reference guide - K0458



A1.1

PV 621: Pneumatic pressure station (Figure A2.1)

-950 mbar to 20 bar (-13.5 to 300 psi)

PV 622: Pneumatic pressure station (Figure A2.2)

-950 mbar to 100 bar (-13.5 to 1500 psi)

PV 623: Hydraulic pressure station (Figure A2.3)

0 to 1000 bar (0 to 15000 psi)

A1.2 PV 62x + DPI 620 + PM 620

Recommended pressure modules (PM 620) * (Figure B1/B2)

PV 621 models	25 mbar to 20 bar (0.36 to 300 psi)
PV 622 models	25 mbar to 100 bar (0.36 to 1500 psi)
PV 623 models	70 to 1000 bar (1000 to 15000 psi)

*Caution: To prevent damage to the PM 620 module, only use it within the specified pressure limit on the label.

A1.3 PV 62x pressure relief valves (PRV)

(Recommended options)

Parts: IO620-PRV-P1 to P5 (Pneumatic)

PV 621 models	1 to 30 bar (14.5 to 435 psi)
PV 622 models	1 to 100 bar (14.5 to 1500 psi)

Parts: IO620-PRV-H1 to H5 (Hydraulic)

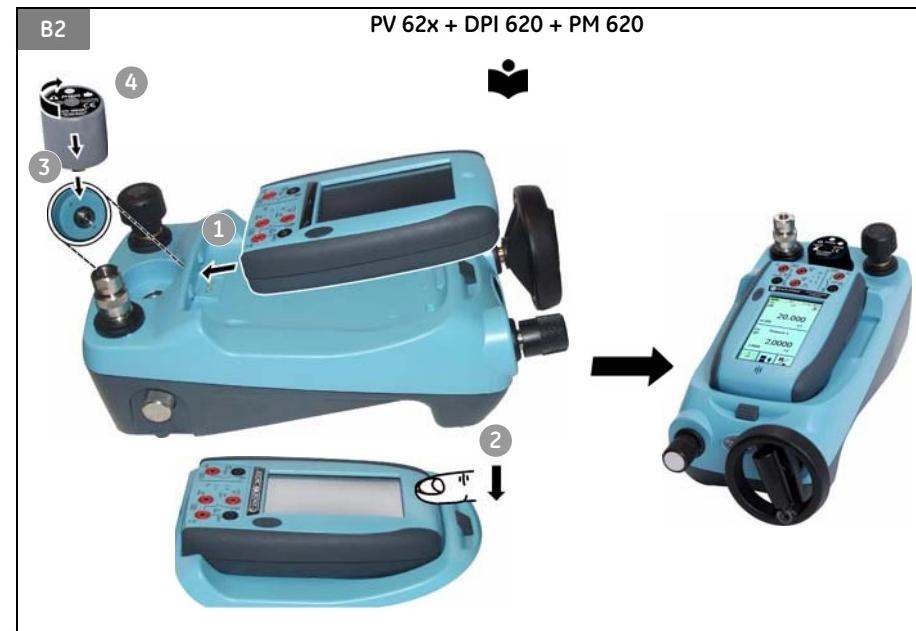
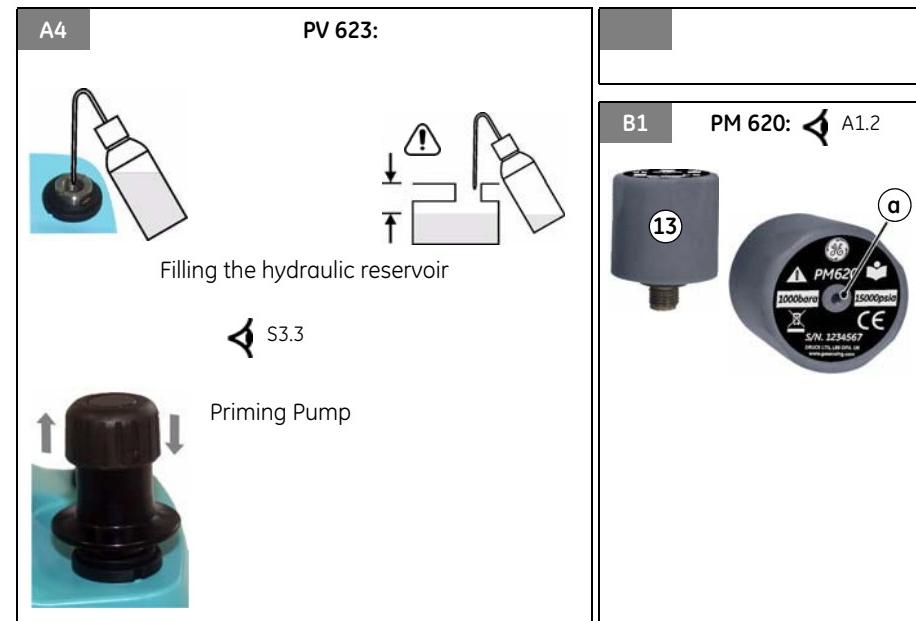
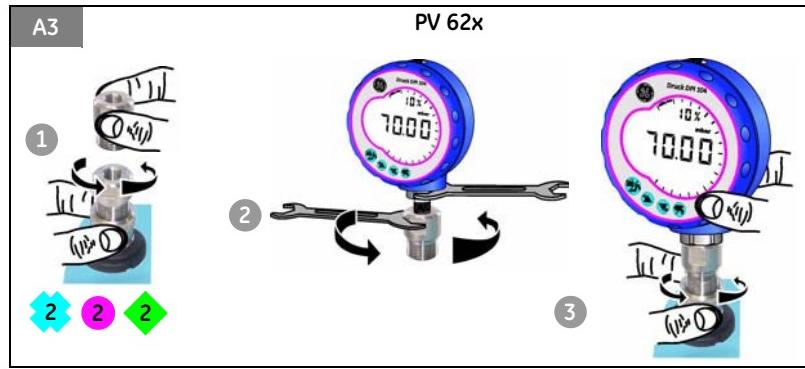
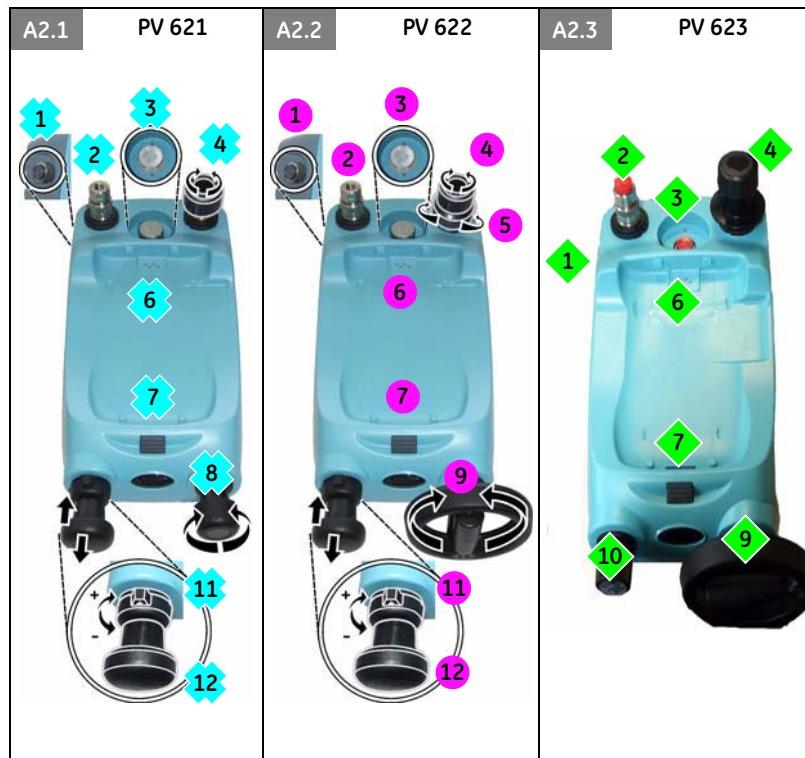
PV 623 models	50 to 1000 bar (725 to 15000 psi)
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Note: = See figure, table, or section.

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Trademarks

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Customer service

Visit our web site: www.gesensing.com

Quick Reference

General warnings

WARNING

- It is dangerous to ignore the specified limits for the instrument or to use the instrument when it is not in its normal condition. Use the applicable protection and obey all safety precautions.
- Do not use the instrument in locations with explosive gas, vapour or dust. There is a risk of an explosion.

Pressure warnings

- It is dangerous to attach an external source of pressure to a PV 62x series pressure station. Use only the internal mechanisms to set and control the pressure in the pressure station.
- Some liquid and gas mixtures are dangerous. This includes mixtures that occur because of contamination. Make sure that the equipment is safe to use with the necessary media.
- To prevent a dangerous release of pressure, isolate and bleed the system before disconnecting a pressure connection.
- To prevent a dangerous release of pressure, make sure that all the related pipes, hoses and equipment have the correct pressure rating, are safe to use and are correctly attached.

Electrical warnings

If you use the DPI 620 calibrator with your pressure station, these warnings are also applicable:

- To prevent electrical shocks or damage to the instrument, do not connect more than 30V between the terminals, or between the terminals and the ground (earth).
- This instrument uses a Lithium-Polymer (Li-Polymer) battery pack. To prevent an explosion or fire, do not short circuit, do not disassemble, keep it safe from damage.

To prevent an explosion or fire, use only the GE specified battery, power supply and battery charger.

Cautions

To prevent damage to the PM 620 module, only use it within the specified pressure limit on the label.

To prevent damage to the instrument, do not let dirt get into the pressure mechanism. Clean the equipment before you attach it.

Before you start an operation or procedure in this publication, make sure that you have the necessary skills (if necessary, with qualifications from an approved training establishment). Follow good engineering practice at all times.

S1 PV 621 models: Start operations

A2.1 (Front cover)

⚠️ WARNING ⚠️

Pressurized gases and fluids are dangerous. Before connecting or disconnecting pressure equipment, safely release all the pressure (Ref: K457, 4.2.2, Release the pressure).

Caution: To prevent damage to the pressure station, do not let dirt get into the pressure mechanism. Before connecting equipment, make sure it is clean or use the applicable dirt trap.

S1.1 Release the pressure/Attach the device under test

Step	Procedure
1.	Open the pressure release valve (one turn) (Ref: Item4).
2.	Use the applicable adaptor to attach the device, (Ref: figure A3, Item 2).

S1.2 Vacuum OR pressure operation

Step	Procedure (Vacuum)
1.	Set to vacuum operation (-) (Ref: Item 11).
2.	Turn the volume adjuster to mid-range or fully clockwise (Ref: Item 8).
3.	Seal the system (Ref: Item 4).
4.	Set the approximate vacuum with the pump (Ref: Item 12).
5.	Adjust the vacuum with the volume adjuster (Ref: Item 8).

Step	Procedure (Pressure)
1.	Set to pressure operation (+) (Ref: Item 11).
2.	Turn the volume adjuster to mid-range (Ref: Item 8).
3.	Seal the system (Ref: Item 4).
4.	Set the approximate pressure with the pump (Ref: Item 12).
5.	Adjust the pressure with the volume adjuster (Ref: Item 8).

S2 PV 622 models: Start operations



A2.2 (Front cover)

WARNING

Pressurized gases and fluids are dangerous. Before connecting or disconnecting pressure equipment, safely release all the pressure (Ref: K457, 4.2.2, Release the pressure).

Caution: To prevent damage to the pressure station, do not let dirt get into the pressure mechanism. Before connecting equipment, make sure it is clean or use the applicable dirt trap.

S2.1 Release the pressure/Attach the device under test

Step	Procedure
1.	Fully open the refill valve.
2.	Open the pressure release valve (one turn) (Ref: Item 4).
3.	Use the applicable adaptor to attach the device, (Ref: figure A3, Item 2)

S2.2 Vacuum OR pressure operation

Step	Procedure (Vacuum)
1.	Set to vacuum operation (-) (Ref: Item 11).
2.	Open the refill valve (1 turn) (Ref: Item 5).
3.	Wind the volume adjuster to mid-range or fully clockwise (Ref: Item 9).
4.	Seal the system (Ref: Item 4).
5.	Set the approximate vacuum with the pump (Ref: Item 12).
6.	Adjust the vacuum with the volume adjuster (Ref: Item 9).

Step	Procedure (Pressure)
1.	Set to pressure operation (+) (Ref: Item 11).
2.	Wind the volume adjuster to mid-range (Ref: Item 9).
3.	Seal the system (Ref: Item 4).
4.	Use the pump to set a pressure up to \approx 20 bar (300 psi) (Ref: Item 12).
5.	Open the refill valve (1 turn) (Ref: Item 5).
6.	Increase or decrease the pressure with the volume adjuster (Ref: Item 9).
7.	If increasing pressure the limit of travel is reached, close the refill valve (Ref: Item 5).
8.	Wind the volume adjuster fully counterclockwise. (Ref: Item 9). There is no change in pressure
9.	Refill the pressure mechanism with the pump (\approx 15 cycles) (Ref: Item 12).
10.	Wind the volume adjuster clockwise until the pressure starts to increase (Ref: Item 9).
11.	Continue to do steps 7 to 10 until you get the necessary pressure.

⚠️ WARNING ⚠️

Pressurized gases and fluids are dangerous. Before connecting or disconnecting pressure equipment, safely release all the pressure (Ref: K457, 4.2.2, Release the pressure).

Caution: To prevent damage to the pressure station, do not let dirt get into the pressure mechanism. Before connecting equipment, make sure it is clean.

S3.1 Release the pressure/Attach the device under test

Step	Procedure
1.	Open the refill valve fully counter-clockwise (Ref Item 10).
2.	Open the pressure release valve counter-clockwise (1 turn) (Ref Item 4).
3.	Use the applicable adaptor to attach the device, (Ref: figure A3, Item 2)

Note: Fill the reservoir before attaching the device. (Ref: figure A4).

S3.2 Filling, priming and generating pressure. (Ref: Figure A4). Fill the reservoir using the procedure that follows:

Caution: Ice in the pressure mechanism can cause damage. If the temperature is less than 4°C (39°F), drain all water from the PV 623 pressure station.

When using the PV 623 pressure station for the first time, fill the reservoir with the correct hydraulic fluid (Ref: Table 7.1 General specification PV 62x). Fill and prime the pressure station.

S3.3 Filling and Priming

Step	Procedure
1.	If new, remove the red plastic blanking cover from the Test port.
2.	Turn the Refill valve fully counter-clockwise.
3.	Turn the Volume adjuster fully clockwise.
4.	Turn the Release Valve Stem fully counter-clockwise.
5.	Remove the Priming pump piston/Release valve stem assembly
6.	Fill the reservoir with the recommended fluid, (Ref: Table 7.1 General specification PV 62x) 25mm approx from the top.
7.	Re-fit the Priming pump piston/Release valve stem assembly
8.	Turn the Release Valve Stem fully clockwise.
9.	Turn the Refill valve fully clockwise, until finger tight.
10.	Turn the Volume adjuster fully counter-clockwise.
11.	Turn the Volume adjuster 5 turns clockwise.
12.	Operate the Priming pump until the air is expelled and fluid is visible at the Test port.
13.	Fit the "Item under test" to the Test port use the existing adaptor or the applicable AMC adaptor and applicable seals.
14.	Operate the Priming pump and prime the system to a maximum pressure of 10 bar.
15.	Turn the Volume adjuster clockwise, until the required pressure is indicated.
16.	Turn the refill valve fully counter-clockwise to allow full pressure control.

1 Overview



PV 621



PV 622



PV 623

There are three pressure stations in the PV 62x series:

- Two pneumatic pressure stations to give you accurate and controlled pressure and vacuum conditions:
PV 621: -950 mbar to 20 bar (-13.5 to 300 psi) version
PV 622: -950 mbar to 100 bar (-13.5 to 1500 psi) version
- One hydraulic pressure station to give you accurate and controlled hydraulic pressure conditions:
PV 623: 0 to 1000 bar (15000 psi)

1.1 Other module options



Pressure calibrator



DPI 620



PM 620

The pressure stations are part of a set of hand-held modules that can produce a wide range of calibrator functions.

DPI 620 Pressure calibrator:

You can use the pressure stations on their own or you can attach the DPI 620 calibrator and a PM 620 module to make a fully integrated pressure calibrator instrument.

Advanced modular calibrator, DPI 620:

Optional item. This is a battery-powered instrument for electrical measure and source operations and HART® communications. It also supplies the power and user interface functions for all the add-on modules. You can use the touch-screen to display up to six different parameters. Refer to user manual - K0449.

Pressure modules, PM 620:

Optional item. These modules attach to a pressure station (PV 62x) to give the DPI 620 calibrator the necessary pressure measurement functionality. They are fully interchangeable “plug and play” modules with no initial set-up or user calibration.

2 Standard equipment

These items are part of the standard equipment with a PV 62x pressure station:

- Removable pressure adaptors (G1/8 and 1/8 NPT)
- PV 623 models only: Refill bottle for hydraulic fluid
- Safety and quick reference guide
- CD with the user manual

3 Safety

Before you use the instrument, make sure that you read and understand all the related data. This includes: the applicable local safety procedures, the user manual (K0457), and the instructions for the accessories/options/equipment you are using it with.

Marks and symbols on the instrument

	Complies with European Union directives		Warning - refer to the manual
	Read the manual	PRV	Pressure relief valve
	Do not dispose of this product as household waste. (Ref: Section 6, Maintenance).		
More marks and symbols are specified in the user manual (K0457 - Druck PV 62x pneumatic/hydraulic pressure stations)			

4 Parts

Refer to the figures on the front cover (A2, B1).

4.1 Key to figure A2 (PV 62x pressure stations)

A2		1.	Optional accessory: Pressure connection for a pressure relief valve (PRV); see table A1.3 (front cover). A blanking plug is standard.
		2.	Test port: Pressure connection (G1/8 or 1/8NPT) to attach the device under test; see figure A3 (front cover).
		3.	Pressure and electrical connections for a PM 620 module. PV 621/PV 622 models: Seal the pressure connection with a blanking plug (Part: IO620-BLANK) or a PM 620 module. PV 623 models only: The pressure connection seals itself.
		4.	Pneumatic pressure release valve (PV 621/PV 622 models) or hydraulic pressure release valve (PV 623 models) to release pressure in the system. On PV 623 models, the priming pump and access to the hydraulic fluid reservoir see figure A4 (front cover).
		5.	PV 622 models only: Pneumatic refill valve. Close it to seal off the device pressure and refill the pressure mechanism (refer to "Quick Reference", S2).
		6.	Moulded compartment for the DPI 620 calibrator with electrical connections and a mechanism to hold it in position.
		7.	Push-button mechanism to release the DPI 620 calibrator.
		8.	PV 621 models only: Pneumatic volume adjuster
		9.	PV 622/PV 623 models only: Volume adjuster wheel with fold-in handle.
		10.	PV 623 models only: Hydraulic refill valve. Close it to seal off the device pressure and refill the pressure mechanism with fluid (refer to "Quick Reference", S3).
		11.	PV 621/PV 622 models only: Pressure/vacuum selector to set the pump operation: pressure (+), vacuum (-).
		12.	PV 621/PV 622 models only: Pump mechanism

4.2 Key to figure B1 (PM 620 module) - Optional item

B1	13. Pressure module (PM 620) with a pressure connection, reference port (a) and a label. The label includes: <i>Pressure limit.</i> Example: 20 bar g (g: gauge; a: absolute); <i>serial number (S/N); manufacturer:</i> name, address, website
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5 Installation

Before starting do the following:

- Read and understand the "Safety" section.
- Do not use damaged equipment.

Note: Use only original parts supplied by the manufacturer.

5.1 External pressure connections

Ref: figure A3 (front cover). Use an applicable method to seal the external pressure connections, and then tighten to the applicable torque. Maximum torque:

1/8 NPT: 35 Nm (26 lbf.ft)

G1/8: 25 Nm (18.4 lbf.ft)

5.2 Calibrator assembly

Optional item (DPI 620/PM 620). See figure B2 (front cover).

Note: To use the DPI 620 calibrator, read the user manuals: K0449 (Druck DPI 620 Advanced modular calibrator) and K0457 (Druck PV 62x pneumatic/hydraulic pressure stations).

B2	Step	Procedure
	1.	Lower the calibrator into the moulded compartment.
	2.	Press on the bottom end of the calibrator until it latches in position.
	3.	Attach a pressure module with the correct range and type.
	4.	Tighten it until it is hand tight only.

6 Maintenance

Clean the case with a moist, lint-free cloth and a weak detergent. Do not use solvents or abrasive materials.

Return the instrument to the manufacturer or an approved service agent for all repairs.

Do not dispose of this product as household waste. Use an approved organisation that collects and/or recycles waste electrical and electronic equipment. For more information, contact one of these:

- Customer service department: www.gesensing.com
- Local government office.

7 Specification

Table 1: General specification

Operating temperature	-10 to 50°C (14 to 122°F) Note: PV 623 models only. If the temperature is less than 4°C (39°F), the instrument must be fully drained and dry.
Storage temperature	-20 to 70 °C (-4 to 158 °F) Note: PV 623 models only. If the temperature is less than 4°C (39°F), the instrument must be fully drained and dry.
Humidity	0 to 90% relative humidity (RH) non-condensing
Shock/Vibration	Def Stan 66-31, 8.4 cat III
EMC	Electromagnetic compatibility: BS EN 61326-1:2006
Electrical safety	Electrical - BS EN 61010:2001
Pressure safety	Pressure Equipment Directive - Class: Sound Engineering Practice (SEP)
Approved	CE Marked
Hydraulic fluid (PV 623 models only)	Reservoir capacity: 100 cm ³ (6.1 in ³) Fluid type: Demineralised water or a mineral oil (ISO viscosity grade ≤ 22)
Power supply	None. If you attach a DPI 620 calibrator to make a pressure calibrator, all the power comes from the DPI 620 calibrator. Refer to user manual K0449 - Druck DPI 620 Advanced modular calibrator.

